Joshua Tapp/R7/USEPA/US
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To Mark Evangelista
cc Michael Jay, Gina Grier
bcc
Subject Konza Prairie CASTNET site

Hi Mark,

I will try to call you early on Thursday. Here is a briefing paper that you may or may not have seen.

Thanks.

CASTNET Brief 1_2013 v3.docx

Josh

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Clean Air Status and Trends Network (CASTNET)
Issues with Konza Prairie Regulatory Ozone Montiorings
Conference Call
January 3, 2013

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Background

Primary purposes of CASTNET:

- Provide data to assess trends in air quality and atmospheric deposition in order to evaluate the effectiveness of national and regional air pollution control programs
- Provide information about complex atmospheric chemistry in rural areas
- Provide information on ecological effects due to changes in air pollutant emissions
- Support development of secondary standards
- Provide measurements for validating and improving atmospheric models

History:

- CASTNET began collecting measurements in 1991 with the incorporation of 50 sites from the National Dry Deposition Network, which had been in operation since 1987
    - 83 sites in 44 states, including Alaska and Canada (2 collocated)
    - Weekly ambient concentrations on the concentration of sulfate, nitrate, ammonium, sulfur dioxide and nitric acid
    - Continuous (hourly) data on ozone levels
    - Sites are located in rural areas where urban influences are minimal
- 2011 EPA upgraded all ozone monitoring equipment at CASTNET sites to comply with the requirements in 40 Code of Federal Regulations (CFR) Part 58 compliant. Ozone measurements from CASTNET sites will now be used to determine if an area meets, or exceeds, the NAAQS
    - Each CASTNET site that measures hourly ozone meets the additional audit requirements and complies with the data reporting deadlines in the CFR
    - CASTNET ozone data is submitted real-time to AIRNow and is updated on the CASTNET website daily

- In addition, CASTNET ozone data is submitted to the Air Quality System (AQS) database managed by OAQPS
- EPA ozone data and data management operated by contractor: AMEC Environment & Infrastructure

Agency Partnerships:

EPA manages 58 sites and NPS manages 25 sites, which includes:

- (3) Long-Term Ecological Research (LTER): KSU Konza Prairie, Manhattan, KS (R7) Site KNZ184, Operating Agency: EPA
- (3) Tribal Sites: Santee Sioux Nation, Niobrara, NE (R7)
- (1) Agricultural Research Service (USDA/ARS): TX
- (4) Forest Service (USDA/USFS)

Issue

The KNZ184 CASTNET monitor may not be properly sited to collect ozone data for regulatory purposes given the research fires conducted at that site and their propensity to generate localized emissions. (See regulatory citation and Konza Prairie description below.)

40 CFR Part 58, Appendix E, Section 3.a., "Spacing from Minor Sources"
It is important to understand the monitoring objective for a particular location in order to interpret this particular requirement. Local minor sources of a primary pollutant, such as SO_2, lead, or particles, can cause high concentrations of that particular pollutant at a monitoring site. If the objective for that monitoring site is to investigate these local primary pollutant emissions, then the site is likely to be properly located nearby. This type of monitoring site would in all likelihood be a microscale type of monitoring site. If a monitoring site is to be used to determine air quality over a much larger area, such as a neighborhood or city, a monitoring agency should avoid placing a monitor probe, path, or inlet near local, minor sources. The plume from the local minor sources should not be allowed to inappropriately impact the air quality data collected at a site. Particulate matter sites should not be located in an unpaved area unless there is vegetative ground cover year round, so that the impact of windblown dusts will be kept to a minimum.

Options to address concerns related to siting issues Konza CASTNET data collection:

1) Classify the ozone monitor as a "Special Purpose Monitor (SPM)" to allow continued ozone data collection for research purposes while excluding such data from compliance/regulatory decision making due to localized area/minor source impacts which call into question the ability of the monitor to meet 40 CFR Part 58 monitor siting criteria.

2) Exclude data from regulatory decision making during certain time periods of localized controlled burns. Specifically, during April and June (and February and November outside the ozone season) research oriented burns are conducted in close proximity to the CASTNET monitor on the same research lands that host the monitor. According to 40 CFR Part 58, such activities impact the ability of the monitor to meet the siting criteria and call into question the validity of the data.

Additional Related Question:

Q. How can a State request exclusion of data (EE) from an EPA/NPS CASNET monitor that meets all requirements of 40 CFR Part 58?

A. The State will to have request event flags to data from monitors operated by the NPS or other federal agencies. The State should first contact the agency operating the monitor to request adding qualifier codes to CASTNET ozone data housed within AQS. State agencies have the responsibility, according to the Exceptional Events Rule, to demonstrate to their EPA region that an exceptional event occurred and should be flagged. CASTNET may work with the states to provide supporting information.

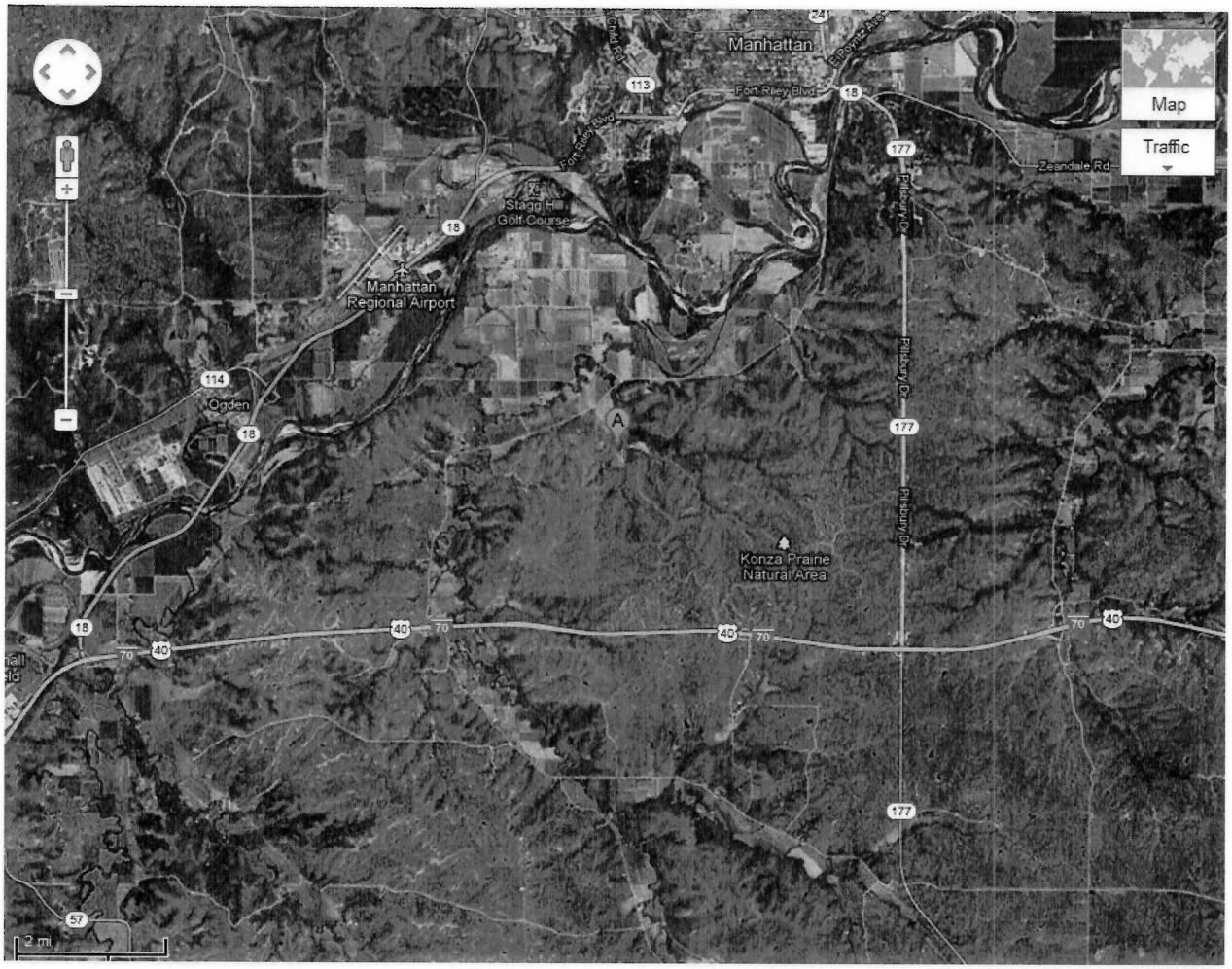
Action items:

1) Schedule a follow up call with OAQPS, CAMD, EPA R7, and KDHE

2) Discuss options for KDHE to submit a supplement request, since technical work has already been done, for ozone exceedances at Konza Prairie CASNET site KNZ184:

April 12, 2011 0.078 ppm

April 13, 2011 0.079 ppm



Konza Prairie Biological Station Research Program:

The Konza Prairie is divided into 50 watershed units, each subjected to a specific combination of prescribed burning regime (burned at 1, 2, 3, 4, 10, or 20 year intervals, and burned in February, April, July, or November) and grazing treatment. The long-term prescribed burning treatments were initiated in 1972 and the bison grazing treatments were initiated in 1987. The various combinations of bison, cattle, and ungrazed units allow large-scale replicated studies of the role of native grazers, comparison of effects of native and domestic ungulates, and effects of varying fire and grazing management regimes on tallgrass prairie ecosystems.